



UNITED STATES PATENT AND TRADEMARK OFFICE

cu

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/933,551 | 08/20/2001 | Marcus J. laGrone | 5671.026 | 6753 |

30589 7590 03/01/2004

DUNLAP, CODDING & ROGERS P.C.
PO BOX 16370
OKLAHOMA CITY, OK 73113

| |
|----------|
| EXAMINER |
|----------|

CONNOLLY, PATRICK J

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

2877

DATE MAILED: 03/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|--------------------------------|------------------------------------|--|
| Office Action Summary | Application No. 09/933,551 | Applicant(s) LAGRONE, MARCUS J. | |
| | Examiner Patrick J Connolly | Art Unit 2877 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-14 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 August 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. ____. |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date ____. | 6) <input type="checkbox"/> Other: ____. |

DETAILED ACTION

Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 4,165,183 to Hall et al (hereafter Hall).

As to claim 1, Hall teaches an interferometer including (see Figure 6):

a tilt compensator and delay element comprising an odd number of mirrors (220);

Hall does not teach using at least three mirrors in the delay element.

Hall does not teach that the delay element *must* be coplanar with the other elements in the optical path.

The applicant's admitted prior art of Figures 2b and 3b teach delay elements comprising an even number of mirrors.

It is notoriously well known in the art that an optical delay can be composed of any number of mirror elements.

It would have been obvious to one of ordinary skill in the art at the time of invention to increase the mirrors in the delay of Hall to a number of three or more so that the delay might be lengthened or shortened.

Further, as Hall does not teach that all the elements in the optical path must be coplanar, it would have been obvious to one of ordinary skill in the art to position mirror 220 so that the beam is deflected out of the plane formed by elements 20', 12' and 14' so as to redirect the beams in a folded manner so as to make an efficient use of space, thereby providing for a more compact interferometer.

As to claim 2, while Hall does not teach deflecting the beam 90 degrees out of plane, it would have been obvious to one of ordinary skill in the art at the time of invention to position mirror 20 to reflect the light beam at any number of angles, including 90 degrees so as to redirect the beams in a convenient manner, making an efficient use of space, thereby providing for a more compact interferometer.

As to claim 3, Hall teaches an interferometer including (see Figures 1 and 6):

a beam splitter (10);

a plurality of steering mirrors (12, 14);

and a delay element (220).

Hall does not teach a scanning mirror with opposing planar faces.

Hall teaches a carriage with two corner cube reflectors (20, 16, 18) that serves an identical function to a scanning mirror with opposing planar faces, as shown in the applicant's admitted prior art. It would have been obvious to one of ordinary skill in the art at the time of invention to substitute the mirror of the admitted prior art for the corner cube assembly of Hall in order to achieve the advantage of a lighter, faster scanning element.

See discussion above regarding planar configuration of delay element.

Art Unit: 2877

With further regard to claims 1 and 3, the inclusion of the phrase “so as to provide tilt correction and to delay the beam” is considered functional recitation as well as intended use and therefore carries no patentable weight.

As to claims 4, 5, 6, 7, 8, 10, 11, 13 and 14, it is well known in the art that optical delays can be placed at a variety of points within the interferometer with the same degree of success and it would have been obvious to one of ordinary skill in the art at time of invention to place the delay at an appropriate position within the interferometer so as to direct the beams in a convenient manner.

As to claim 6, Hall teaches a Genzel arrangement (see Figure 1).

As to claims 9 and 12, while Hall does not teach a Genzel Mach Zehnder or Genzel Michelson arrangement, such interferometric arrangements are well known in the art (see applicant’s admitted prior art). It would have been obvious to one of ordinary skill in the art at the time of invention to include such an arrangement in the apparatus of Hall in order to achieve the well-known advantages of these arrangements.

Art Unit: 2877

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Patrick J Connolly whose telephone number is 571.272.2412. The examiner can normally be reached on 9:00 am - 7:00 pm Monday-Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Frank G. Font can be reached on 571.272.2415. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

pjc f16


Frank G. Font
Supervisory Patent Examiner
Technology Center 2800